

ENVIRONMENTAL CHAMBER



The EML Environmental Chamber is a user facility with unique capabilities for generating controlled atmospheres with aerosols and radioactive gases. It is capable of maintaining a great range of a combination of environmental, aerosol and radioactive aerosol parameters, and is ideally suited for the creation of a wide variety of regimes for sophisticated experiments and instrumental calibration and testing. The chamber interior volume of 25 m³ allows several people with large pieces of equipment to work simultaneously. Chamber temperature, relative humidity, aerosol and radioactive aerosol concentration can be recorded automatically; the calibration of the radon monitoring instruments is traceable to a NIST standard.

■ Radon, Thoron Concentration

- ▲ up to 5,000 Bq/m³

■ Aerosol Parameters

- ▲ Background particle concentration of < 1/cm³
- ▲ Two monodisperse Aerosol Generators (TSI 3472 and TSI 3470)
- ▲ Particle diameter between 70 nm and 11,000 nm at particle concentrations between 10,000 and 50,000/cm³
- ▲ Aerosol characterization using TSI Electrostatic Classifier (TSI 3071A)
- ▲ Aerosol loss rate: < 0.14/hour

■ Chamber Characteristics:

- ▲ 25 m³ usable volume; chamber lined with stainless steel; organic vapors minimized
- ▲ Air leakage rate: 26-39 L/min

■ Environmental Parameters:

- ▲ Temperature set points between 5°C and 40°C (± 1 °C)
- ▲ Relative humidity set point: 5% to 100% RH (± 2% RH)

■ Some recent uses of the chamber have been:

- ▲ Intercomparison of active and passive radon and radon progeny instrumentation
- ▲ Development and testing of a new radon and radon progeny instrumentation
- ▲ Testing of equipment for use in the characterization of uranium mine atmospheres (ambient temperature, 5°C, 100% RH)
- ▲ Testing of equipment for detection of radioactive xenon with applications in nuclear nonproliferation



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